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BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

Application Number: 10/617,376
Filing Date: July 11, 2003
Appellant(s): FLOWERS ET AL.

Everett G. Diederiks, Jr.
For Appellant

EXAMINER'S ANSWER

This is in response to the appeal brief filed August 10, 2007 appealing from the Office action mailed February 13, 2007.

(1) Real Party in Interest

A statement identifying by name the real party in interest is contained in the brief.

(2) Related Appeals and Interferences

The examiner is not aware of any related appeals, interferences, or judicial proceedings which will directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

(3) Status of Claims

The statement of the status of claims contained in the brief is correct.

(4) Status of Amendments After Final

The appellant's statement of the status of amendments after final rejection contained in the brief is correct.

(5) Summary of Claimed Subject Matter

The summary of claimed subject matter contained in the brief is correct.

(6) Grounds of Rejection to be Reviewed on Appeal

The appellant's statement of the grounds of rejection to be reviewed on appeal is correct.

(7) Claims Appendix

The copy of the appealed claims contained in the Appendix to the brief is correct.

(8) Evidence Relied Upon

4,491,653	MCGINNISS et al.	1-1985
2004/0171724	SEIP et al.	9-2004
5,882,728	BUSCHGES et al.	3-1999

(9) Grounds of Rejection

The following ground(s) of rejection are applicable to the appealed claims:

Claims 1-6, 8-11, and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over McGinniss et al (U.S. Patent 4,491,653), and further in view of Seip et al (U.S. Patent Publication 2004/0171724).

McGinniss et al, hereafter "McGinniss", discloses a method for improving stain resistance of a polymeric solid, as recited by claim 1. McGinniss teaches a process of fluorinating the surface of an article (reaction) with a mixture of fluorine gas and air (oxygen) in a 1-2 liter reaction cell (chamber) thereby to impart improved dirt resistance (stain resistance). This is shown at lines 22-31 in column 2, 61-66 in column 2, 3-7 in column 5, 37-40 in column 7, 31-33 in column 10, 49-50 in column 10, and in reference claims 3-6.

McGinniss teaches a polypropylene substrate, as required by claim 2, at lines 49-50 in column 10.

McGinniss teaches a fluorination time of 1-30 minutes, meeting the 0.5-60 minute requirement of claim 3, and further teaches a fluorine gas concentration of. 4%, meeting the less than 5% vol requirement of claims 4 and 5. These teachings are shown at lines 35-43 in column 4 and in reference claims 3 and 5.

McGinniss teaches nitrogen as an additional component to the gas mixture, as required by claim 6, at lines 59-63 in column 4 and in reference claim 6.

McGinniss teaches a reaction pressure of about 1 atmosphere, as required by claim 13, and as shown at lines 27-31 in column 2.

McGinniss does not teach that the polymeric solid is a washing machine component, as required by claims 1 and 2, and further does not teach that the component is a dishwasher component, as required by claim 8, or a specific dishwasher component, as required by claims 9, 10, and 11.

Seip et al, hereafter "Seip", teaches enhanced stain resistance for such appliances as washing machines and dishwashers having polypropylene constituents. This is shown in the Abstract and in paragraph [0007]. It is well known in the art that dishwashing machines have tubs, door liners, and spray arms as plastic componentry.

McGinniss and Seip are combinable because they are concerned with a similar technical field, namely, stain-resistant polyolefin surfaces. One of ordinary skill in the art at the time of the invention would have found it obvious to include in the method of McGinniss the application, as taught by Seip, and would have been motivated to do so for the commercial benefit of a consumer product category.

Claims 7 and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over McGinniss in view of Seip, as applied to claims 1-6, 9-11, and 13 above, and further in view of Buschges et al (U.S. Patent 5,882,728).

McGinniss and Seip teach the method of claims 1-6, 9-11, and 13, as discussed above. McGinniss and Seip do not teach maintaining the reaction chamber at a temperature of approximately 30-70° C, as required by claim 12. McGinniss and Seip further do not teach a penetration depth of about 1000 A (0.1 um).

Buschges et al, hereafter "Buschges", teaches a (preferable) temperature range of 20-80° C at lines 1-5 in column 2, 16-25 in column 2, 28-33 in column 2 and 586.1 in column 2. B0schges further teaches a fluorinated layer depth of (preferably) 0.1-100 um.
McGinniss, Seip, and Buschges are combinable because they are concerned with a similar technical field, namely, surface enhancement of polyolefin materials. One of ordinary skill in the art at the time of the invention would have found it obvious to include in the method of

McGinniss and Seip the temperature range and penetration depth, as taught by Buschges, and would have been motivated to do so to optimize the reaction parameters and to provide sufficient barrier property.

(10) Response to Argument

Appellant essentially alleges that the combination does not teach or suggest treating plastic washing machine components with a gas that contains fluorine and oxygen.

Appellant argues that McGinniss et al. is concerned with treating the surface of fibers for clothing, plastic bags for blood and safety glasses by fluorination and that Seip et al. disclose a polyoelefin composition that is stain resistant. Appellant argues that McGinniss et al. take a preformed product and employ a surface treatment thereon, while Seip et al. change the overall composition used to make a stain resistant component. Further, appellant states that the examiner appears to be disregarding the teaching concerning the mandated composition of Seip et al. In conclusion, appellant argues that if the examiner is going to rely upon Seip et al. to teach making components of household appliances stain resistant then one would look to utilize the composition of Seip et al. to achieve that desire, particularly as McGinniss et al. has absolutely no teaching that fluorine treatment would even work on the type of stains encountered in connection with a household appliance and that accordingly there is no apparent reason to make the proposed combination.

This is not persuasive. In responding to and addressing the arguments set forth above, the examiner provides the following characterization of the McGinniss et al. and Seip et al. references:

McGinniss et al. teach a method of treating the surface of a polymeric solid for improving the surface properties of the polymeric solid by fluorinating the surface in the presence of a restricted amount of oxygen (Abstract). Some of the surface properties improved by the

treatment include soil/dirt resistance, stain resistance and scratch resistance (col. 1, lines 36-46; col. 2, lines 61-67; col. 3, lines 39-42; Table 5). While McGinniss et al. do mention fibers for clothing, plastic bags for blood and safety glasses, as examples, as argued, (col. 1, lines 25-29), these are to "name but just a few of such items" (col. 1, lines 29-30) and McGinniss et al. further state that the disclosure is applicable to "all types of polymeric solids" (col. 2, lines 7-11). Further still, McGinniss et al. specifically teach that polypropylene substrates may be made stain resistant by the disclosed method (col. 10, lines 49-50; Table 5).

Seip et al. teach a method of producing a stain resisistant polyolefin plastic composition by incorporating an additive package in the plastic and also teach components fabricated from the plastic composition (Abstract; paragraphs [0009-0011]). Specifically, stain resistant polypropylene compositions and components are produced (paragraphs [0008-0010]). The stain resistant polypropylene is intended to be used in dishwashers and washing machines (paragraphs [0003-0006]).

In combining the references, the examiner has not looked to the additive package employed by Seip et al. to make a polypropylene resin stain resistant, but has used the Seip et al. reference to show that it would have been *prima facie* obvious to one having ordinary skill to take the generic stain resistant polypropylene polymeric substrate taught by McGinniss et al. and to have used it as a stain resistant polypropylene polymeric part in a dishwasher and washing machine as suggested by Seip et al. Essentially, only the Abstract and paragraphs [0003-0012] of Seip et al. are relied upon in the combination.

In essence, it is the examiner's position that McGinniss et al. teach a genus of polypropylene substrates that may be made stain resistant and Seip et al. teach that it is desirable to make a species of polypropylene parts, namely washing machines and

dishwashers, stain resistant. Accordingly, the examiner maintains that the combination is proper and teaches and suggests the argued limitations.

Appellant further argues that the process taught by McGinniss et al. expressly discusses disadvantages associated with the use and presence of oxygen by referring to the process taught by Dixon et al. (US 4,020,223). This comparison is used by McGinniss et al. to illustrate the disadvantage of employing oxygen in the McGinniss et al. arrangement, not to teach adding oxygen as held by the examiner.

This argument is not persuasive. A further review of the McGinniss et al. reference shows that while McGinniss et al. do suggest, for example, that using 3.0% oxygen (Dixon-1; D1-A and D1-B; Example 4 and Table 5) yields poorer stain resistant results for polypropylene substrates than using a restricted amount of oxygen (Example 4 and Table 5), McGinniss et al. clearly teach that some oxygen may be present during the fluorination treatment (Abstract; col. 2, lines 36-41; col. 4, lines 29-34).

For example, McGinniss et al. teach: "The proportion of oxygen providing compounds (e.g. molecular oxygen or air) present during the fluorination process is restricted to an amount such that substantially no oxidation of the polymeric surface occurs." (col. 2, lines 36-41, emphasis added).

The examiner submits therefore that while McGinniss et al. suggest a restricted amount of oxygen is desired, the use of a certain amount of oxygen during the fluorination process is within the clear teaching of McGinniss et al. Further, since the appealed claims do not recite any particular amount or range of oxygen, McGinniss et al. teach and suggest fluorine and oxygen as claimed.

Appellant argues that there is no teaching regarding the specific components recited in claims 9-11. Appellant further argues that, for all we know from the cited teachings, Seip et al. was only referring to plastic knobs or trim pieces of household appliances, not components which could have spaghetti sauce and other highly staining foods periodically placed thereon.

This argument is not persuasive. The examiner notes that Seip et al. teach that the parts of interest in dishwashers and washing machines are the polyolefin parts that are "in these appliances" (last sentence of paragraph [0003], emphasis added). Further, Seip et al. teach the parts "experience high temperatures" (last sentence of paragraph [0005]) and that the intent is to employ polyolefins that "resist staining when used in appliances such as dishwashers and washing machines that are exposed to high temperatures in addition to food" (paragraph [0006]). Further still, Seip et al. refer to ketchup, a tomato based food, in the Figures.

The examiner submits that the clear suggestion of Seip et al. is to employ the plastic parts inside the actual washing machine and dishwasher and not as plastic knobs or trim pieces, as argued. The claimed specific parts of the washing machine and dishwasher are suggested and at least implied by Seip et al. since the claimed plastic parts are the conventional plastic parts found inside washing machines and dishwashers. One having ordinary skill in the art would have clearly recognized that the "parts" referred to by Seip et al. include these conventional parts.

Appellant argues that McGinniss et al. teach the fluorine treatment is performed "at a pressure not substantially above about one atmosphere..." and that the clear meaning of this phrase requires a pressure above one atmosphere. Accordingly, the limitations of claim 13 are not met.

This argument is not persuasive. The examiner submits that the cited recitation from McGinniss et al.'s abstract is ambiguous and does not clearly require a pressure above one atmosphere as argued. However, McGinniss et al. provide an unambiguous statement at col. 7, lines 36-40, wherein they state that "a total pressure of 1 atmosphere or less" is employed in the process. Accordingly, the examiner submits that McGinniss et al. render the claimed range *prima facie* obvious (MPEP 2144.05 I). Further, McGinniss et al. teach that reaction pressure is one of the variables which will necessarily impact the fluorination reaction time (col. 4, line 65-col. 5, line 2). Accordingly, the examiner submits that the reaction pressure would have been readily optimized as a result effective variable, thereby also rendering the claim *prima facie* obvious absent new or unexpected results.

Appellant argues that there is no reason to modify the method of McGinniss et al. to arrive at the penetration depth or operating temperatures taught by Buschges et al. in order to meet the limitations of claim 7 and 12.

This argument is not persuasive. Regarding the temperature limitations of claim 12, the examiner notes as an initial matter that McGinniss et al. teach the invention is "operated not substantially above about room temperature" (Abstract) and "at room temperature" (col. 4, lines 35-36). The examiner submits that at the lower end of the claim 12 range, "approximately 30 °C", the teaching of McGinniss et al. of "above about/at room temperature" renders the claim *prima facie* obvious. Further, McGinniss et al. teach that reaction temperature is one of the variables which will necessarily impact the fluorination reaction time (col. 4, line 65-col. 5, line 2). Accordingly, the examiner submits that the reaction temperature would have been readily optimized as a result effective variable in view of McGinniss et al., thereby also rendering claim 12 *prima facie* obvious absent new or unexpected results.

Further still, Buschges et al. teach fluorinating the surface of plastic articles, such as polypropylene articles (col. 2, lines 3-10), with a variety of fluorine based gaseous compounds, including compounds which comprise oxygen, such as nitrogen oxyfluoride (col. 2, lines 20-26), in order to improve the barrier properties of the plastic against the penetration of volatile substances (col. 1, lines 11-15) of relatively small molecules (col. 1, lines 42-45). Buschges et al. further teach that the chemical nature of the molecules to be blocked is not critical (col. 3, lines 63-67).

In order to achieve the improved barrier properties, Buschges et al. teach the thickness range is 0.01 to 100 microns (col. 1, lines 3-10) and is preferably 0.1 to 100 microns (col. 3, lines 44-45). The examiner notes that 1000 angstroms = 0.1 microns. In order to achieve this depth of fluorination, Buschges et al. teach a preferred processing temperature range of 20 - 80 °C (col. 2, line 53-col. 3, line 3).

Accordingly, the examiner submits that it would have been *prima facie* obvious to one having ordinary skill in the art at the time of the claimed invention to have modified the polypropylene fluorination treatment disclosed by McGinniss et al. and to have provided the depth of fluorination taught by Buschges et al.'s polypropylene fluorination treatment in order to further improve the barrier properties of McGinniss et al.'s polypropylene substrate. Further, it would have been *prima facie* obvious to one having ordinary skill in the art at the time of the claimed invention to have employed the temperatures disclosed by Buschges et al. in the method of McGinniss et al. for the purpose of achieving Buschges et al.'s depth of fluorination in McGinniss et al's substrate.

(11) Related Proceeding(s) Appendix

No decision rendered by a court or the Board is identified by the examiner in the Related Appeals and Interferences section of this examiner's answer.

For the above reasons, it is believed that the rejections should be sustained.

Respectfully submitted,

Jeff Wollschlager
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